

1 CLAIMS

2 I claim:

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4 1. A device for supporting a body or a portion thereof,
5 comprising:

6 a foam mattress, cushion, seating pad or other structure
7 containing cutout portions or otherwise designed or configured
8 to reduce local stresses on a supported body, reduce cross
9 contamination between a patient and the surroundings, and
10 reduce the incidence of dust mites into the support system;

11 a bladder or membrane impervious to gases or other fluids,
12 completely encasing said mattress, cushion, seating pad or
13 other structure;

14 a passageway or other means to allow and control the
15 ingress and egress of a gas or other fluid into or out of the
16 pores and/or vacant regions within or around the materials
17 encased by said bladder or membrane; and

18 optionally, a pressure/vacuum pump to allow continuous
19 variation of the fluid pressure within said bladder or
20 membrane.

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22 2. A device according to claim 1 wherein the encased material
23 comprises a foam mattress in which portions of the support
24 material have been removed or omitted in one or more selected
25 regions of the material, and the sides of the opening thus
26 formed are such that they slope outward and downward from the
27 center like a truncated cone or a bell-shaped opening.

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2 3. A device according to claim 1 wherein one or more of the
3 edges of the mattress, cushion, seating pad or other body
4 support surface is undercut such that the edge tapers inward
5 toward the bottom of the mattress, cushion, seating pad or
6 body support element.

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8 4. A device according to claim 1 wherein said mattress,
9 cushion, or seating pad is formed from a convoluted foam
10 material.

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12 5. A device as in claim 1 wherein said mattress, cushion, or
13 seating pad is formed from a convoluted foam material and said
14 convoluted foam material is inserted with smooth side upward
15 and one or more cut-outs are made for the purpose of reducing
16 local stresses on the body or sections thereof.

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18 6. A device according to claim 1 wherein the encased material
19 provides for reduction of localized stresses by a modular
20 construction technique using different types of foam material
21 in selected regions to form a composite foam mattress.

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23 7. A device according to claim 1 wherein the encased material
24 provides for reduction of localized stresses by a modular
25 construction technique using different types of foam material
26 encased in individual membranes in selected regions to form a
27 composite foam mattress.

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2 8. A device according to claim 1 wherein said bladder is
3 permanently sealed to prevent any escape or replacement of the
4 fluid contained therein.
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6 9. A device according to claim 1 wherein said bladder is
7 enclosed by a Ziploc® or similar fastening means.
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9 10. A device according to claim 1 wherein the encased
10 material comprises a seat cushion and wherein said seat
11 cushion contains provisions for localized relief of stress
12 comprising one or more regions where material has been removed
13 or omitted selectively from said seat cushion.
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15 11. A device as in claim 1 where a variable orifice is
16 contained within the surrounding membrane to control the rate
17 of gaseous exchange from within the membrane to outside of the
18 membrane and vice versa.
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20 12. A device for supporting a body or a portion thereof,
21 comprising:
22 a foam mattress, cushion, seating pad or other structure
23 containing cutout portions or otherwise designed or configured
24 to reduce local stresses on a supported body, reduce cross
25 contamination between a patient and the surroundings, and
26 reduce the incidence of dust mites into the support system;

1 a bladder or membrane permeable or semi-permeable to gases
2 or other fluids, completely encasing said mattress, cushion,
3 seating pad or other structure;

4 a passageway or other means to allow and control the
5 ingress and egress of a gas or other fluid into or out of the
6 pores and/or vacant regions within or around the materials
7 encased by said bladder or membrane; and

8 optionally, a pressure/vacuum pump to allow continuous
9 variation of the fluid pressure within said bladder or
10 membrane.

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12 13. A method for reducing the possibility of development of
13 deleterious body lesions in a human body under conditions of
14 continued bed confinement by;

15 placing a mattress, cushion, seating pad or other
16 structure, designed or configured to minimize localized stress
17 concentrations caused by the weight of the body thereon,
18 within a bladder or membrane impervious to gases or other
19 fluids,

20 completely encasing said mattress, cushion, seating pad or
21 other structure; and

22 varying the fluid pressure in the material as a means of
23 controlling the resiliency of said material to the desired
24 support level.

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26 14. A method according to claim 13 wherein the encased
27 material comprises a mattress containing provision for

1 reduction of localized stresses in certain portions of the
2 body being supported by the removal of portions of the
3 mattress material in one or more selected regions.

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5 15. A method according to claim 13 wherein the encased
6 material contains provisions for reduction of localized
7 stresses by the removal of portions of the mattress material
8 in one or more selected regions where the hole in the
9 remaining material is in the shape of an upright truncated
10 cone.

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12 16. A method according to claim 13 wherein the encased
13 material contains provisions for reduction of localized
14 stresses by means of cutting or slicing portions of the
15 mattress material in one or more selected regions.

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17 17. A method according to claim 13 wherein the encased
18 material comprises a seat cushion of suitable support
19 material.

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21 18. A method according to claim 13 wherein the encased
22 material comprises a seat cushion and said seat cushion
23 contains provisions for localized relief of stress comprising
24 one or more regions where material has been removed
25 selectively from the seat cushion.

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1 19. A method according to claim 13 wherein one or more of the
2 edges of the mattress, cushion, or seating pad is undercut
3 such that the edge tapers inward toward the bottom of the
4 mattress, cushion, or seating pad.

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6 20. A method according to claim 13 wherein said mattress,
7 cushion, or seating pad comprises a plurality of modules,
8 separated from one another and contained within individual
9 fluid-tight membranes or bladders.

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11 21. A method according to claim 13 wherein said mattress,
12 cushion, or seating pad is formed from a convoluted foam
13 material.

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15 22. A method according to claim 13 wherein the encased
16 material comprises a seat cushion.

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18 23. A method according to claim 13 wherein the encased
19 material comprises a seat cushion and wherein said seat
20 cushion contains provisions for localized relief of stress
21 comprising one or more regions where material has been removed
22 or omitted selectively from said seat cushion.

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